A REVIEW OF *SCOTOECUS* THOMAS, 1901 (CHIROPTERA : VESPERTILIONIDAE)

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A REVIEW OF *SCOTOECUS* THOMAS, 1901 (CHIROPTERA : VESPERTILIONIDAE)

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INTRODUCTION

CURRENT classification of the genus *Scotoecus* rests basically on Ellerman, Morrison-Scott & Hayman (1953 : 83) who recognized two species in southern Africa, one (*albofuscus*) with pale wings, the other (*hirundo*) with dark wings. Hayman (1963 : 104) expanded this opinion in a brief review, and allocated the named forms then in the genus to one or other of these as subspecies. Rosevear (1965 : 300) retained *falabae* from northern Nigeria as a distinct species, but Hayman & Hill (1971 : 36) recognized only *albofuscus* and *hirundo* as valid species. However, specimens examined recently at the British Museum (Natural History) have suggested that the dark-winged group is composed of two species, one smaller, for which *hirundo* is available, the other a little larger in size, for which the earliest name is *hindei*. Hitherto, *Scotoecus* has been considered exclusively African, but a study of the Indian species first described as *Scotophilus pallidus* by Dobson (1876 : 186) and nowadays generally referred to *Nycticeius* shows it to be more closely allied to *Scotoecus*, to which it is transferred.

Measurements throughout are in millimetres : minimum and maximum values are given for series, with (in parentheses) the number of specimens measured.

SYSTEMATIC SECTION

SCOTOECUS Thomas, 1901

Scotoecus Thomas, 1901 : 263. Type species *Scotophilus albofuscus* Thomas, 1890.

DIAGNOSIS. Similar to *Scotozous* and *Nycticeius* but with spatulate or nearly spatulate tragus (Fig. 1) ; braincase elevated frontally to give a slightly convex frontal profile ; rostrum greatly widened at the lachrymals ; narial and prepalatal emarginations exceptionally deep ; zygomata tenuous, usually lost in preparation ; and anterior face of the upper canine flattened and grooved.

DESCRIPTION. Small (length of forearm 28–38) ; muzzle broad, flattened, anteriorly sparsely haired, nares circular, opening obliquely ; ear rounded with rounded tip, its anterior margin lacking any basal lobe ; tragus spatulate or nearly so with small, more or less triangular posterior basal lobe ; calcar extending along two thirds of the uropatagial margin with small post-calcarial lobe ; penis sometimes exceptionally long.

Skull low, braincase broad, with slight occipital helmet and low lambdoid and sagittal crests ; skull slightly elevated frontally to produce a faintly convex profile ; interorbital region wide, rostrum broad, much expanded at lachrymals ; anteorbital foramen moderate or large, closed by strong, nearly vertical bar ; small supraorbital tubercles often present ; narial emargination wide, U-shaped or slightly

V-shaped, the apex rounded, deep, extending posteriorly at least to a line joining the anterior margins of the anteorbital foramina, sometimes to a line joining the anterior margins of the orbits; pre-palatal emargination wide, extending posteriorly to a point lying between a line joining the anterior faces of the large upper premolars (pm^{4-4}) and a line joining the anterior faces of the first upper molars (m^{1-1}); zygomata tenuous, in African species often lost in preparation; maxillary toothrows not markedly convergent anteriorly; a narrow post-palatal spine and shallow basioccipital depressions.

Dental formula $i\frac{1}{3}$, $c\frac{1}{1}$, $pm\frac{2}{2}$, $m\frac{3}{3} = 32$ or $i\frac{1}{3}$, $c\frac{1}{1}$, $pm\frac{1}{2}$, $m\frac{3}{3} = 30$. Massive, unicuspid inner upper incisor (i^2), in contact with the canine or nearly so; anterior face of upper canine flattened, grooved, sometimes prominently so; anterior upper premolar (pm^2) minute or absent, when present compressed into a lingual recess between canine and the second upper premolar (pm^4) which are otherwise in contact; pm^4 with antero-medial cusp or protocone low or absent; upper molars (m^{1-3}) with protocones prominently developed; the lingual shelves widely separated, m^3 not reduced, its crown area exceeding one half the crown area of m^1 or m^2, with prominent metacone, metastyle and three commissures; lower incisors (i_{1-3}) imbricated; anterior lower premolar in the Indian species reduced to one third to one half the crown area of the second lower premolar (pm_4) which is not compressed in the toothrow; in the African species pm_2 a little less in crown area than pm_4, the latter slightly shortened antero-posteriorly, compressed between pm_2 and the first lower molar (m_1); third lower molar (m_3) not reduced or only very slightly reduced, its posterior triangle not at all or only a little smaller than the anterior triangle, hypoconid and entoconid present, the latter slightly the lesser.

Literature. Trouessart, 1904 : 85 (spelt *Scotaecus*); Miller, 1907 : 217 (generic diagnosis); Wettstein, 1918 : 654 (review, key); Simpson, 1945 : 59 (incorporated into *Nycticeius*); Ellerman, Morrison-Scott & Hayman, 1953 : 83 (status, partial key, a subgenus of *Nycticeius*); Hayman, 1963 : 104 (review, tooth formula, variability of pm^2, a subgenus of *Nycticeius*); Koopman, 1965 : 17 (status, generically valid); Rosevear, 1965 : 289, 297 (status, description, partial key, generically valid); Ansell 1967 : 21 (as a genus); Hayman & Hill, 1971 : 36 (key, notes, distribution, subgenus of *Nycticeius*); Koopman, in litt., in Hayman & Hill, 1971 : 36 (a subgenus of *Nycticeius*).

Distribution and species. Indian and African, in India a semi-desert species inhabiting tropical thorn forest, in Africa occurring chiefly in open woodland in three species with few records from the high forest. The Indian species (first described as *Scotophilus pallidus* by Dobson, 1876 : 186) was for many years referred to *Scoteinus* (see below) but is here allocated to *Scotoecus* on account of its aural and rostral features, together with its grooved upper canines. Its features are less extreme than are those of the African species of *Scotoecus* and apparently it forms a link between these and *Nycticeius*, with which in recent years it has been associated The African members of the genus may be divided into two sections, the one pale-winged, with brownish ventral surface, the other dark-winged, the ventral surface

pale, usually some shade of greyish. These correspond to the two species currently recognized in Africa by most modern authors. The examination of Ethiopian specimens and of specimens from Cameroon and Uganda in the course of preparing this study has suggested the further division of the dark-winged section into two species, one smaller, the other larger ; however, the genus is still known from relatively few specimens and the classification presented here is to that extent provisional. The species may be keyed :

1 Tragus long, relatively narrow ; zygomata not cartilaginous ; pm_2 reduced, its crown area one third to one half that of pm_4 ; this tooth not compressed in toothrow . . . . . *pallidus* (p. 172)
– Tragus short, relatively wide ; zygomata cartilaginous ; pm_2 unreduced, its crown area subequal to that of pm_4 ; this tooth compressed in toothrow 2

2 Tragus more or less parallel-margined, the upper part of its anterior margin not prolonged anteriorly ; outer part of wing membrane pale ; ventral surface of body brown ; braincase slightly flattened *albofuscus* (p. 174)
– Tragus slightly hatchet-shaped, the upper part of its anterior margin projected forward ; outer part of wing membrane dark ; ventral surface of body greyish, at most tinged with brown ; braincase slightly elevated 3

3 Smaller, length of forearm generally less than 33·0, condylobasal length 13·2 or less, $c–m^3$ 5·1 or less . . . . . *hirundo* (p. 177)
– Larger, length of forearm generally exceeding 32·0, condylobasal length 13·5 or more, $c–m^3$ 5·2 or more . . . . . *hindei* (p. 179)

HISTORY. First separated from *Scotophilus* at the generic level by Thomas (1901 : 263), *Scotoecus* was considered generically valid by Miller (1907 : 217), who allied it with *Nycticeius* and *Scoteinus*. Allen (1939 : 98) listed *Scotoecus* as a distinct genus for Africa but since that date opinions of its status have diverged. Simpson (1945 : 59) incorporated it into *Nycticeius*, a lead followed by Ellerman, Morrison-Scott & Hayman (1963 : 83) who treated *Scotoecus* as a subgenus of *Nycticeius* with the comment that the characters given by Thomas and Miller seemed more subgeneric than generic. Hayman (1963 : 104) and Hayman & Hill (1971 : 36) adopted this view but Rosevear (1965 : 289) noted that *Scotoecus* is readily distinguished from *Nycticeius* and considered that it merited generic separation, a view followed by Ansell (1967 : 21) and shared by Koopman (1965 : 17) who did not consider *Scotoecus* congeneric with *Nycticeius* but later (in litt., in Hayman & Hill, 1971 : 36) revised this opinion to accord *Scotoecus* subgeneric rank only.

REMARKS. There seem no good grounds for considering *Scotoecus* congeneric with *Nycticeius* : the form of the tragus, the elevated cranium and widened rostrum with deep anterior emarginations, and the grooved upper canines of *Scotoecus* separate it sharply from this genus. The convexity of the frontal area in *Scotoecus*, its broad rostrum with deep emarginations and its weak zygomata present a parallel with *Nyctalus*, in which, however, no modification of the upper incisors has occurred.

Scotoecus pallidus (Dobson, 1876)

? *Vespertilio noctulinus* Geoffroy, 1831 : 92, pl. 3. Bengal, India.
Scotophilus pallidus Dobson, 1876 : 186, Appendix D, 208. Mian Mir, Punjab, northwestern India.

DIAGNOSIS. Differing from the African *S. albofuscus*, *S. hirundo* and *S. hindei* in thicker, more fleshy ears, more swollen at the antitragus ; tragus (Fig. 1) longer and relatively narrower, its tip more expanded ; narial emargination faintly V-shaped, its lateral margins slightly convergent posteriorly, the apex rounded ; pre-palatal emargination narrower ; anteorbital foramen smaller ; zygomata tenuous but not cartilaginous ; anterior lower premolar (pm_2) reduced, its crown area one third to one half that of the second lower premolar (pm_4) which is not compressed in the toothrow ; third lower molar (m_3) slightly reduced, the posterior triangle a little narrower than the anterior triangle. Differs further from *S. hirundo* and *S. hindei* in less inflated and less elevated braincase, in this respect resembling *S. albofuscus*.

DESCRIPTION. Large for the genus (length of forearm 34–38) ; lips fleshy ; ear moderate, reaching about halfway to tip of muzzle, with fleshy membrane and antitragal thickening ; anterior margin of tragus straight, tip rounded, anteriorly directed, posterior margin convex, penis not exceptionally developed. Dorsal surface pale brown, tinged with fawn, ventral surface paler, greyish white.

Skull relatively massive, with (especially in older individuals) low occipital helmet and posterior sagittal and lambdoid crests ; slight supraorbital ridges with incipient supraorbital tubercles ; anterior margin of orbit nearly vertical, the supraorbital and lachrymal regions swollen ; anteorbital foramen moderate, closed by narrow bar ; narial emargination wide, faintly V-shaped, slightly narrowed posteriorly, its lateral margins slightly convergent, extending posteriorly a little more than halfway to the anterior orbital margin ; pre-palatal emargination wide, U-shaped, extending posteriorly to a line joining the anterior faces of the second upper premolars (pm^{4-4}) ; zygomata narrow, tenuous but not cartilaginous ; post-palatal extension narrow, with small, delicate post-palatal spine.

Dental formula $i\frac{1}{3}$, $c\frac{1}{1}$, $pm\frac{1}{2}$, $m\frac{3}{3} = 30$. Upper canine with flattened, faintly grooved anterior face ; small upper premolar (pm^2) absent ; large upper premolar (pm^4) compressed between the canine and the first upper molar (m^1), with small antero-medial cusp or protocone ; m^{1-3} with strong protocones, their lingual shelves widely separated ; anterior lower premolar (pm_2) much reduced, one third to one half the crown area of the second lower premolar (pm_4) and less than one half its height, compressed between the canine and pm_4 ; third lower molar (m_3) very slightly reduced, posterior triangle a little narrower than the anterior triangle, hypoconid and entoconid slightly smaller than protoconid, paraconid and metaconid.

MEASUREMENTS. Length of forearm (14) 34·1–38·4 ; condylobasal length (8) 14·1–14·9 ; condylocanine length (8) 13·9–14·7 ; least interorbital width (10) 4·0–4·4 ; zygomatic width (1) 10·5 ; width of braincase (9) 7·3–8·1 ; mastoid width (7) 8·9–9·7 ; c^1–c^1 (9) 4·9–5·5 ; m^3–m^3 (9) 6·5–6·9 ; c–m^3 (11) 5·2–5·7 ; c–m_3 (11) 5·8–6·2.

LITERATURE. Dobson, 1876 : 186 (description), 208 (holotype listed) ; 1878 : 257, 258 (in *Scoteinus*, a subgenus of *Scotophilus*), 264 (description repeated), pl. xv, fig. 3 (ear) ; Blanford, 1891 : 222 (further description) ; Trouessart, 1897 : 119, 1904 : 85 (in *Scoteinus*, a subgenus of *Scotophilus*) ; Siddiqi, 1961 : 125 (Pakistan localities reviewed) ; Sinha & Chakraborty, 1971 : 53 (cranial features, measurements), figs. 1A, 2A, 3A (skull).

DISTRIBUTION. WEST PAKISTAN (Sind : Dobson, 1877 : 310 ; Anderson, 1881 : 137 ; Wroughton, 1916 : 752 ; Siddiqi, 1961 : 125 ; Sinha & Chakraborty, 1971 : 54). INDIA (Punjab : Dobson, 1876 : 186, 208, 1877 : 310, 1878 : 264 ; Anderson, 1881 : 137 ; Allen, 1908 : 48. Uttar Pradesh ; Bihar : Khajuria, 1951 : 120 ; Sinha & Chakraborty, 1971 : 54 ; specimens collected at Bahgownie, Darbhanga District, Bihar by N. A. Baptista in the collections of the British Museum (Natural History)).

The record from Massowa, Eritrea, Ethiopia by Thomas & Doria (1886 : 206) in fact refers to *Nycticeius schlieffenii*, these authors having been misled by a comparison with a specimen of *schlieffenii* with an erroneous locality, identified by Dobson as *pallidus* (Thomas, 1890 : 86).

HISTORY. A rarely collected species to which there are relatively few references. Described as a *Scotophilus*, the species was placed by Dobson (1878 : 257, 258) and by Trouessart (1897 : 119, 1904 : 85) in the subgenus *Scoteinus*, subsequently elevated to generic rank by Miller (1907 : 217) but diagnosed by this author without reference either to its type species (designated by Miller, p. 217) *Scotophilus emarginatus* Dobson, 1871 or to *Scotophilus pallidus* Dobson, 1876. The type species has been shown by Sinha & Chakraborty (1971 : 53) to be congeneric with the species known for many years as *Scotomanes ornatus* (Blyth, 1851)* and *pallidus* does not in any event conform to the diagnosis of *Scoteinus* by Miller : the lachrymal region is widened as in the African species of *Scotoecus* and the third molars (m $\frac{3}{3}$) are almost unreduced, the narrowing of the rostrum and reduction of m $\frac{3}{3}$ being the chief diagnostic features of *Scoteinus* as understood by Miller, who had seen only the Australian species *balstoni* and *greyii* and the African *schlieffenii*, all nowadays usually referred to *Nycticeius*.

REMARKS. As might be expected from the disjunct distribution, the Indian *S. pallidus* differs more widely from its African congeners than these do from each other. In particular, a number of its features are less extreme than in the African species and its dentition approaches more nearly to the type exemplified by *Nycticeius*. There seem no good grounds for referring *pallidus* to this genus, however, since in *Nycticeius* the rostrum is not broadened and the upper canine is rounded anteriorly, not at all flattened or grooved : the same is true of the Australian species referred hitherto to *Scoteinus* and more recently to *Nycticeius*. In these, additionally, a greater measure of reduction of the third molars (m $\frac{3}{3}$) has occurred.

* The generic synonymy was not discussed by Sinha and Chakraborty. *Scoteinus* and *Scotomanes* were proposed simultaneously by Dobson (1875: 371) *Scoteinus* having line priority. Article 24 of the International Code of Zoological Nomenclature provides that in such a case the relative priority of the names is determined by the action of the first reviser. Sinha and Chakraborty may be considered to be first revisers and continue to use *Scotomanes*. In view of the varied uses of *Scoteinus* this action is in accord with Recommendation 24A of the International Code, which suggests that the name that ensures stability and universality of nomenclature be selected.

Vespertilio noctulinus I. Geoffroy, 1831. Tate (1942 : 282) and Ellerman & Morrison-Scott (1951 : 177) suggested that this name should be associated with *pallidus* rather than considered a synonym of *Scotophilus temminckii* (= *S. kuhlii*) as it had been hitherto. It has a long history in the early literature : the description is repeated by Temminck (1840 : 211), who, in a supplement to the same work, subsequently provided (p. 266) a further description with details of the dentition, referring specimens from Singapore in the collections of the Rijksmuseum van Natuurlijke Historie, Leiden, to *noctulinus*. Cantor (1846 : 185), in a catalogue of the mammals of the Malay Peninsula referred the name to the synonymy of *Scotophilus temminckii* (= *S. kuhlii*) with the comment that *Nycticeius noctulinus*, Temminck referred to the young of the species, a view supported by Jentink (1888 : 183) who listed a young example of '*Vespertilio noctulinus* Is. Geoffroy' as *Scotophilus temminckii*. Wagner (1840 : 543, 1855 : 765) also provided further descriptions : Fitzinger (1870 : 367) gave a detailed synonymy to that date, with another description (as *Nycticejus noctulinus*) but Dobson (1876 : 120, 1878 : 258) referred the name to the synonymy of *Scotophilus temminckii*. Here it has since remained (Blanford, 1891 : 320, although this author evidently had some reservations, placing a query after the allocation ; Trouessart, 1897 : 118) until recent years. It is of interest to note that Oldfield Thomas has made a marginal note in his copy of Dobson's Catalogue (1878) which reads 'Size of a pipistrelle! F.a. 36 (Not a *Scotophilus*)!' – the grounds on which Tate suggested association with *pallidus*.

Scotoecus albofuscus (Thomas, 1890)

Diagnosis. Similar to *S. pallidus* but smaller ; ears not especially fleshy ; tragus (Fig. 1) smaller, spatulate, not prolonged anteriorly ; distal part of wing whitish ; supraorbital region widely expanded ; lateral margins of narial emargination not convergent posteriorly ; anteorbital foramen large ; zygomata cartilaginous ; anterior lower premolar (pm_2) unreduced and third lower molar (m_3) barely reduced.

Description. Small (length of forearm 28·5–31·0) ; ear membrane and antitragus relatively thin ; tragus small, spatulate, upper part of its anterior margin not prolonged anteriorly. Dorsal surface brown, ventral surface similar but slightly paler ; wing blackish brown from body to a line joining elbow to knee but whitish from forearm, the forearm and digits dark ; interfemoral membrane dark brown.

Skull with broad, low, flattened braincase ; supraorbital region widely expanded ; narial emargination U-shaped, its lateral margins not convergent posteriorly ; anteorbital foramen large, closed by a strong, nearly vertical bar ; zygomata cartilaginous, often lost in preparation.

Dental formula $i\frac{1}{3}$, $c\frac{1}{1}$, $pm\frac{1}{2}$, $m\frac{3}{3} = 30$. Upper canine with flattened, strongly grooved anterior face ; small upper premolar (pm^2) absent in all eight specimens examined and in one (No. 22412, Musée Royale d'Afrique Centrale, Tervuren) seen by Dr F. de Vree (in litt.) ; large upper premolar (pm^4) with antero-medial cusp or

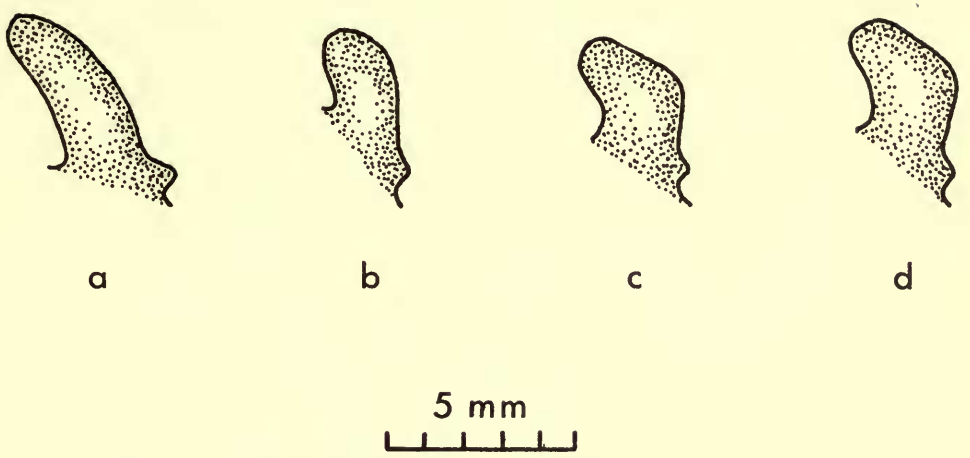

FIG. 1. Tragus of (a) *Scotoecus pallidus*. (b) *Scotoecus albofuscus*. (c) *Scotoecus hirundo*. (d) *Scotoecus hindei*.

protocone low or absent ; upper molars (m^{1-3}) with strongly developed protocones ; anterior lower premolar (pm_2) unreduced, its crown area almost equal to that of the second lower premolar (pm_4) which is compressed in the toothrow and is slightly flattened antero-posteriorly ; third lower molar (m_3) barely reduced, the width of its posterior triangle nearly equal to that of the anterior triangle.

DISTRIBUTION AND SUBSPECIES. Known from a limited number of specimens from localities in West Africa, Zaire, Tanzania and Malawi. Following Hayman (1963 : 105), Hayman & Hill (1971 : 37) recognized three subspecies, *S. a. albofuscus* in West Africa, *S. a. cinnamomeus* Wettstein, 1916 in the Sudan and *S. a. woodi* Thomas, 1917 in southern and eastern Zaire, Tanzania and Malawi. However, *cinnamomeus* is based upon an example of *Nycticeius schlieffenii**.

Scotoecus albofuscus albofuscus (Thomas, 1890)

Scotophilus albofuscus Thomas, 1890 : 84. Bathurst, Gambia.

DIAGNOSIS. Upper canine with rounded base, its antero-internal margin not sharply angular, postero-internal margin rounded, lingual shelf narrow.

MEASUREMENTS. Length of forearm (4) 29·8–31·0 ; condylobasal length (3) 12·7–13·5 ; condylocanine length (3) 12·8–13·3 ; least interorbital width (3) 4·1–4·4 ; zygomatic width — ; width of braincase (4) 7·3–7·7 ; mastoid width (3) 8·2–9·0 ; c^1–c^1 (3) 4·4–5·1 ; m^3–m^3 (3) 6·6–6·7 ; c–m^3 (4) 4·7–5·0 ; c–m_3 (2) 5·1–5·3.

* The status of *cinnamomeus* Wettstein, 1916 from Kordofan has been reviewed in some detail by Kock (1969: 188). The preliminary description by Wettstein (1916: 191) was succeeded by a more detailed study (1918: 653) with illustrations (p. 653, fig. 12) of the ear and tragus and more particularly (pl. 4, figs. 5, 5a-b) of the skull and dentition. As Kock points out, these ally *cinnamomeus* undoubtedly with *Nycticeius schlieffenii*. This opinion is supported by Koopman (in litt., in Hayman & Hill, 1971: 37) who has examined the holotype in Vienna.

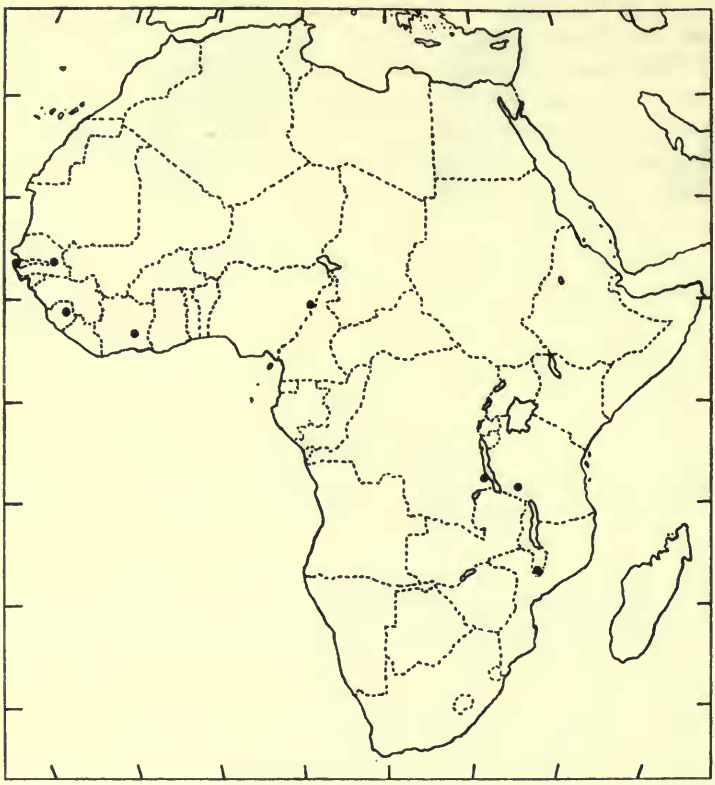

FIG. 2. Distribution of *Scotoecus albofuscus*.

LITERATURE. Rosevear, 1965 : 298, 299 (description), fig. 78 (skull), 305, fig. 80a (tragus).

DISTRIBUTION. SENEGAL (Badi : Thomas, 1911 : 119, as a location in Gambia) ; GAMBIA ; SIERRA LEONE (both Rosevear, 1965 : 299, from specimens in British Museum (Natural History)) ; IVORY COAST (Ayérémou (= Ahiérémou, 6°14′ N., 4°56′ W. ?), specimens in the Muséum d'Histoire Naturelle, Geneva (F. de Vree, in litt.)) ; NIGERIA (Dollman, 1908 : 546).

Scotoecus albofuscus woodi Thomas, 1917

Scotoecus woodi Thomas, 1917 : 280. Chiromo, southern Malawi, 200 feet.

DIAGNOSIS. Upper canine with angular base, its antero-lateral margin forming a right angle, postero-internal margin angular and projecting, the lingual shelf wide.

MEASUREMENTS. Length of forearm (5) 28·5–30·5 ; condylobasal length (4) 12·9–13·7 ; condylocanine length (4) 12·9–13·7 ; least interorbital width (4) 4·1–4·3 ; zygomatic width — ; width of braincase (4) 7·2–7·6 ; mastoid width (3) 8·8–9·0 ;

c^1–c^1 (4) 4·8–5·1 ; m^3–m^3 (4) 6·3–6·8 ; c–m^3 (4) 4·8–5·1 ; c–m_3 (4) 5·1–5·5 (specimens all from Chiromo, Malawi). Dr F. de Vree (in litt.) has measured a specimen (No. 22412) in the Musée Royale d'Afrique Centrale, Tervuren, from Baudouinville (07°03′ S., 29°42′ E.), Zaire : length of forearm 29·4 ; condylobasal length 12·9 ; least interorbital width 4·6 ; zygomatic width — ; width of braincase 7·3 ; mastoid width c. 8·4 ; m^3–m^3 6·7 ; c–m^3 5·2 ; c–m^3 (alveoli) 4·8 ; c–m_3 (alveoli) 5·5.

LITERATURE. Harrison, 1958 : 98, fig. 1 (whole animal), fig. 2 (head).

DISTRIBUTION. ZAIRE (Hayman, 1957 : 44 ; Hayman, Misonne & Verheyen, 1966 : 56) ; TANZANIA (Harrison, 1958 : 96 ; Vesey-Fitzgerald, 1964 : 64) ; MALAWI ; probably in ZAMBIA (Ansell, 1960, Appendix A, p. 110, Appendix B, p. 117).

REMARKS. According to Thomas (1917 : 280), *woodi* of southern Africa can be distinguished from the West African *albofuscus* by its smaller size, proportionately broader skull and by the different shape of the base of the upper canine. The small series of *albofuscus* and *woodi* available in the collections of the British Museum (Natural History) do not support the statement that *woodi* is significantly smaller than *albofuscus* and it appears to differ in size from *albofuscus* only in a generally very slightly wider rostrum, equalled in width by one of *albofuscus*.

Scotoecus hirundo (de Winton, 1899)

Scotophilus hirundo de Winton, 1899 : 355. Gambaja, Ghana, 1300 feet.

DIAGNOSIS. Similar in most respects to *S. albofuscus* but anterior margin of tragus (Fig. 1) projected anteriorly in its distal part to give the tragus a slightly hatchet-shaped outline, its upper margin nearly horizontal, the junction of the upper and posterior margins angular, slightly obtuse ; wing membranes wholly dark ; ventral surface of body some shade of grey ; braincase slightly inflated and rounded dorsally, less flattened ; pm^2 usually but not always present, the dental formula $i\frac{1}{3}, c\frac{1}{1}, pm\frac{2}{2}, m\frac{3}{3} = 32$ or $i\frac{1}{1}, c\frac{1}{1}, pm\frac{1}{2}, m\frac{3}{3} = 30$.

VARIABILITY OF PM^2. The presence of a minute anterior upper premolar (pm^2) sandwiched tightly between the canine and pm^4 is variable in *S. hirundo*, pm^2 being totally absent from three of the nineteen specimens examined. The tooth is present in both sides of the jaw in a specimen (in the Muséum National d'Histoire Naturelle, Paris) from Saboya, Senegal. Dr F. de Vree (in litt.) has examined further specimens (in the Muséum d'Histoire Naturelle, Geneva) from the Bandia Forest, Senegal : two of these possessed the small pm^2 but so far as could be seen, this was lacking from a third. It is present in both sides of the jaw in one from Sierra Leone but totally absent from another (Hayman, 1963 : 105). There is no trace of pm^2 in the holotype from Ghana : it is present on both sides of the jaw in one specimen from the Cameroon but in another present in the left hand side only. Of ten examples from Ethiopia, eight have the tooth on both sides of the jaw, in one it is present in the right hand side only and in one it is totally absent. Three specimens from Uganda have pm^2 present on both sides of the jaw.

MEASUREMENTS. Length of forearm (18) 29·7–32·8 ; greatest length of skull (15) 12·6–13·7 ; condylobasal length (16) 12·1–13·0 ; condylocanine length (16) 12·1–13·1 ; width of rostrum (18) 5·9–6·5 ; width across anteorbital foramina (18) 4·6–5·2 ; least interorbital width (18) 4·2–4·6 ; zygomatic width (1) 10·3 ; width of braincase (16) 7·0–7·7 ; mastoid width (13) 8·0–8·8 ; c^1–c^1 (18) 4·3–5·0 ; m^3–m^3 (18) 5·9–6·7 ; c–m^3 (18) 4·7–5·1 ; length of complete mandible (15) 8·9–9·9 ; c–m_3 (18) 4·9–5·4. Dr F. de Vree (in litt.) has measured three specimens (see above) (one skull only prepared) from the Bandia Forest, Senegal : length of forearm 31·0–32·3 ; greatest length of skull 13·9 ; condylobasal length 12·9 ; least interorbital width 4·7 ; width of braincase 7·8 ; mastoid width 8·9 ; m^3–m^3 6·5 ; c–m^3 5·3 ; c–m^3 (alveoli) 4·9 ; length of mandible 10·1, c–m_3 (alveoli) 5·3.

LITERATURE. Rosevear, 1965 : 300 (further description), 305, fig. 80c (tragus).

DISTRIBUTION. SENEGAL (Saboya, specimen in Muséum National d'Histoire Naturelle, Paris ; Bandia Forest, specimens in the Muséum d'Histoire Naturelle, Geneva (F. de Vree, in litt.)) ; Sierra Leone (Hayman, 1963 : 105) ; GHANA ; CAMEROON (Yagoua, specimens obtained by F. de Vree and W. Verheyen) ; ETHIOPIA (Gambela, 515 and 1768 metres, 8°15′ N., 34°35′ E., and Didessa River, Wollega Province, 1190 metres, 9°02′ N., 36°09′ E., specimens in British Museum (Natural History)); UGANDA (Budongo, 1°39′ N., 31°35′ E., specimens in British Museum (Natural History)).

REMARKS. In recent years (following Hayman, 1963 : 104) the named forms in the dark-winged section of *Scotoecus* have been considered subspecies of *hirundo*, the earliest name. However, measurements of specimens in the collections of the British Museum (Natural History) and of specimens examined in 1971 for Dr F. de Vree, Antwerp, suggest that two species are involved, basically one of smaller size and northern distribution for which the prior name is *hirundo*, and a second species of larger size and predominantly more southern distribution for which the earliest name is *hindei*.

A specimen (B.M. 72.4421) from the Didessa River, Wollega Province, Ethiopia, is in close agreement with *hirundo* from West Africa : another (B.M. 72.4423) from the same locality is clearly referable to *hindei*. These are supported by a series of specimens (B.M. 70.2263–2270) and a further example (B.M. 72.4420), all from Gambela, western Ethiopia, which agree with *hirundo* : others (B.M. 70.2262, 72.4422) from Bulcha, Lake Margherita, some 200 miles to the southeast of Gambela, are referable to *hindei*. *Scotoecus* has apparently not been collected hitherto in Ethiopia. The two also occur almost sympatrically in Uganda : specimens (B.M. 74.1–5) (including pregnant or lactating females) obtained at Budongo (1°39′ N., 31°35′ E.) by J. F. Kingdon and clearly referable to *hirundo* contrast sharply in size with others (B.M. 63.1151, 65.3435) referable to *hindei* from West Madi (3°30′ N., 31°35′ E.) and Nabumali, South Bugisu (0°59′ N., 34°12′ E.). Furthermore, two specimens obtained at Yagoua, northern Cameroon, by F. de Vree and W. Verheyen agree very closely with *hirundo* and were collected concurrently at that locality with two further larger specimens referable with little doubt to *falabae*, here considered to be a subspecies of *hindei*. No *Scotoecus* has been reported hitherto from the

Cameroon. There is evidence to suggest, therefore, that in Ethiopia a small species (*hirundo*) occurs with or in close proximity to a larger species (*hindei*) : both occur in nearby localities in Uganda and are again sympatric in the Cameroon. Measurements of *hirundo* and of *hindei* from the areas of sympatry or near sympatry are contrasted in Table 1.

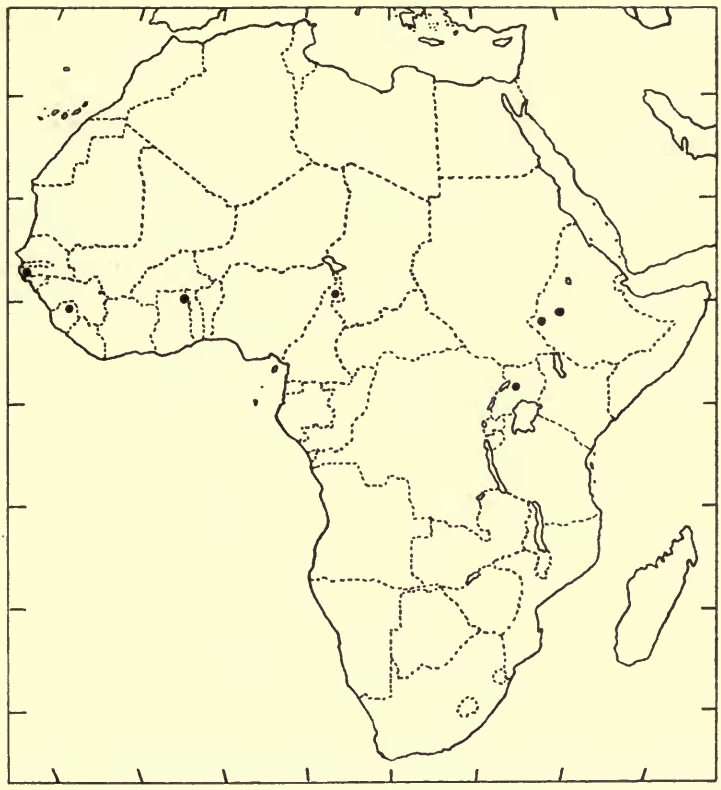

FIG. 3. Distribution of *Scotoecus hirundo*.

Scotoecus hindei Thomas, 1901

DIAGNOSIS. Similar to *S. hirundo* but larger, especially cranially, with the supraorbital and anteorbital regions wider and more greatly expanded.

VARIABILITY OF PM^2. The minute anterior upper premolar (pm^2) is generally present in *S. hindei* : its presence in twenty-six examples in the collection of the British Museum (Natural History) is variable only in those from Ethiopia and Kenya. The tooth is present on both sides of the jaw in two specimens from Ethiopia, but in a third example present only in the left-hand side of the jaw. Among Kenyan specimens, the tooth is present on both sides in eight, present in the right-hand side but absent from the left in another, and totally absent from two further examples, one the holotype of *S. hindei hindei*. Hollister (1918 : 94) notes that pm^2 is completely absent from one of five Kenyan specimens in the Museum of Natural History,

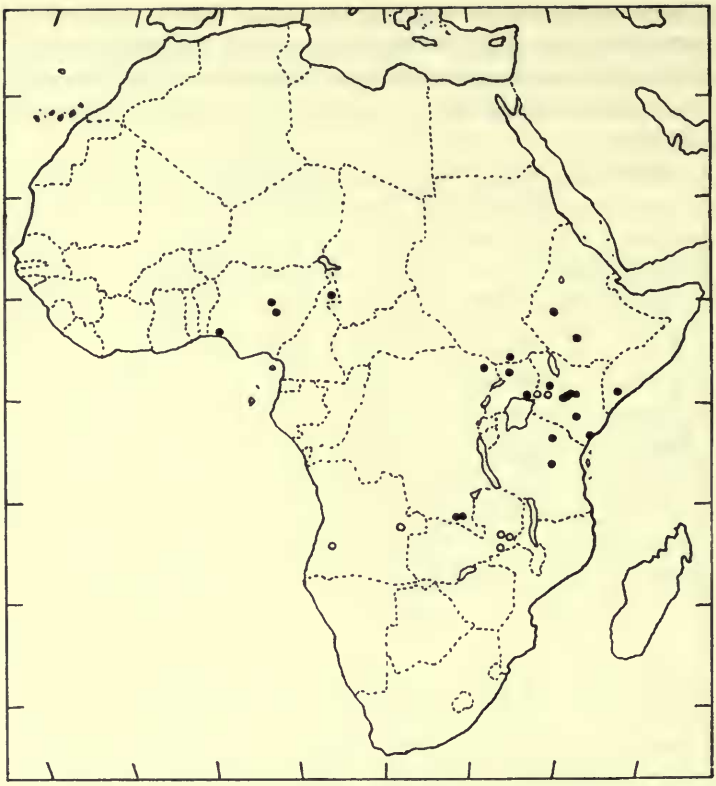

FIG. 4. Distribution of *Scotoecus hindei*. Records referred to *S. h. albigula* are indicated by unshaded circles ○.

the Smithsonian Institution, Washington, but that an alveolus can be seen on one side. The tooth is present in a further specimen reported (as *albigula*) by this author from Kiriba, Sudan (see below). Furthermore, Dr F. de Vree notes (in litt.) that pm^2 is absent from a specimen (M.R.A.C. 22192) in the Musée Royale d'Afrique Centrale, Tervuren, from Kapalowe, Katanga Zaire. Allen (1911 : 330) describes pm^2 in detail.

DISTRIBUTION. Nigeria, Cameroon and Sudan to Ethiopia and Somalia ; Kenya, Uganda and Tanzania to Zambia ; Zaire ; Angola.

Scotoecus hindei hindei Thomas, 1901

Scotoecus hindei Thomas, 1901 : 264. Kitui, Kenya, 1150 metres (in original description as 3500 feet).

(?) *Scotoecus artinii* de Beaux, 1923 : 98. Archer's Post, northern Guaso Nyiro, Kenya.

MEASUREMENTS. Length of forearm (15) 32·0–37·2 ; greatest length of skull (14) 13·8–15·0 : condylobasal length (15) 13·4–14·4 ; condylocanine length (15) 13·3–14·4 ; width of rostrum (14) 6·6–7·8 ; width across anteorbital foramina (14)

5·1–6·0 ; least interorbital width (15) 4·4–4·8 ; zygomatic width (1) 10·7 ; width of braincase (15) 7·3–8·0 ; mastoid width (15) 8·8–9·7 ; c^1–c^1 (14) 5·0–5·6 ; m^3–m^3 (14) 6·6–7·4 ; c–m^3 (16) 5·3–5·7 ; length of complete mandible (13) 10·0–11·2 ; c–m_3 (16) 5·5–6·4. Dr F. de Vree (in litt.) has measured a specimen (see above) from Kapalowe, Katanga, Zaire : length of forearm 33·2 ; greatest length of skull 14·7 ; condylobasal length 13·8 ; least interorbital width 4·5 ; zygomatic width 10·5 ; width of braincase 7·6 ; mastoid width 9·1 ; m^3–m^3 7·0 ; c–m^3 5·4 ; c–m^3 (alveoli) 4·9 ; length of mandible 10·1 ; c–m_3 (alveoli) 5·3.

DISTRIBUTION. SUDAN (G. M. Allen, 1914 : 349, as *Scoteinus schlieffenii*, identified as *Scotoecus* by Koopman, 1965 : 16 ; Hollister, 1918 : 94, from Kiriba, 'Uganda', a locality in southern Sudan according to Kock, 1969 : 192, as *albigula* ; Kock, 1969 : 192) ; ETHIOPIA (from Bulcha, Lake Margherita, 1800 metres, 6°11′ N., 38°10′ E., and from Didessa River, Wollega Province, 1190 metres, 9°02′ N., 36°09′ E., specimens in British Museum (Natural History)) ; SOMALIA (de Beaux, 1924 : 155, as *artinii* ; Funaioli, 1971 : 29, 64, as *hirundo*) ; ZAIRE (J. A. Allen, 1916 : 447, as *Scoteinus schlieffenii*, identified as *Scotoecus hirundo hindei* by Koopman, 1965 : 16 ; Hayman, 1954 : 291 ; Leleup, 1956 : 77 ; Anciaux de Faveaux, 1958 : 271 ; Hayman, Misonne & Verheyen, 1966 : 56) ; UGANDA (Hayman & Hill, 1971 ; 36, as *albigula*) ; KENYA (G. M. Allen, 1911 : 330 ; Dollman, 1914 : 309, in part Nos. 148, 149, 150, as *Scoteinus schlieffenii*, re-identified in the present study ; Hollister, 1918 : 94 ; Harrison, 1961 : 293) ; TANZANIA (a manuscript note by R. W. Hayman in a British Museum (Natural History) copy of Hayman & Swynnerton, 1951 (p. 294), records a specimen from Lake Mangona, but this example not seen ; Dodoma, specimen in British Museum (Natural History)).

Scotoecus artinii de Beaux, 1923. The precise status of *artinii* is far from clear. Koopman (1965 : 17) is inclined to regard *artinii*, *hindei* and a third more southerly form, *albigula*, as synonymous and notes that a specimen reported from Niangara, eastern Zaire, by J. A. Allen (1916 : 447) as *Scoteinus schlieffenii* is in fact a *Scotoecus*, referring it to *S. hirundo hindei* (= *S. hindei hindei*) with the remark that its best agreement seems to be with *artinii*. Hayman & Hill (1971 : 36) listed *artinii* as a subspecies of *hirundo* (*S. hindei* as here understood), considering (p. 37) on the basis of specimens from the Cherangani Hills, western Kenya, that possibly it might be a small form distinct from both *hindei* and *albigula*.

Three specimens attributed to *artinii* by R. W. Hayman were collected in 1966 by Mr A. N. Start at the Wei Wei River, Sigor, northeastern Cherangani Hills, Kenya, at about 3000 feet, the same collector subsequently obtaining in 1967 further examples (now B.M. 68.481–482) at the same locality. Mr Start also obtained three specimens attributed to *albigula* by R. W. Hayman from the Cherangani Hills at 6000 feet in 1965. Of these eight it has been possible to examine only B.M. 68.481–482, but the collections of the British Museum (Natural History) include three further examples (B.M. 14.7.31.15–17) of *S. hindei* from the Wei Wei River, formerly identified as *Scoteinus schlieffenii* (Nos. 148, 149, 150 of Dollman, 1914 : 309).

Male specimens from the Wei Wei River agree quite closely with the male holotype of *S. hindei hindei* and with male specimens referred to this subspecies from the

Lorian Swamp and the Guaso Nyiro, differing only in their slightly more slender canines. In this respect they resemble the male examples B.M. 63.1151 from West Madi, Uganda, and B.M. 65.3435 from Nabumali, South Bugisu, Uganda. However, a single male specimen collected 30 miles northwest of Baringo, Kenya, bridges this difference. Specimens from the Wei Wei River and from Uganda are generally a little smaller than specimens from more easterly locations and are similar in size to the specimen from Zaire measured by J. A. Allen (1916 : 447) (as *Scoteinus schlieffenii*). On the whole they are a little larger than specimens of *S. hindei* from the northern Cameroon.

De Beaux gives few diagnostic characters for *artinii* but his measurements indicate a short skull with the palatal width and toothrow dimensions of *S. hindei* : Hollister (1918 : 94) reports *hindei* from Archer's Post, Kenya, the type locality of *artinii*. For the present *artinii* is considered a provisional synonym of *S. h. hindei* but there remains the possibility that a subspecies with slender canines is to be found in western Kenya, Uganda and eastern Zaire and it is to this that perhaps *artinii* refers. If *artinii* can be distinguished then three subspecies of *hindei* occur in Kenya, namely *S. h. hindei* to the north, east and south, *S. h. artinii* to the west and northwest and *S. h. albigula* to the southwest. It is possible also that the rather larger *albigula* may be found to be specifically valid, but direct sympatry with *hindei* (including *artinii*) has yet to be demonstrated. The reported occurrences of the three forms in East Africa display a degree of overlap.

Scotoecus hindei albigula Thomas, 1909

Scotoecus albigula Thomas, 1909 : 544. Kirui, Mount Elgon, Kenya, 6000 feet.

Diagnostic. Larger than *S. h. hindei*, with larger, more massive teeth ; canines longer and heavier.

Measurements. Length of forearm (3) 35·0–38·5 ; greatest length of skull (3) 15·3–15·5 ; condylobasal length (3) 14·7–14·8 ; condylocanine length (3) 14·8–15·0 ; width of rostrum (3) 7·2–7·7 ; width across anteorbital foramina (3) 5·7–6·0 ; least interorbital width (3) 4·5–4·9 ; zygomatic width — ; width of braincase (3) 8·0–8·1 ; mastoid width (3) 9·6–9·9 ; c^1–c^1 5·3–5·8 ; m^3–m^3 (3) 7·5–8·0 ; c–m^3 (5) 5·9–6·0 ; length of complete mandible (3) 11·2–11·6 ; c–m_3 6·5–6·6.

Literature. Monard, 1935 : 52 (notes, description repeated, in French) ; Hill & Carter, 1941 : 52 (notes, descriptive data), 177 (measurements of Angolan specimen, from Monard).

Distribution. Kenya (three examples collected in 1965 by A. N. Start in the Cherangani Hills, east of Mount Elgon, northeast of Kitale, Kenya, at 6000 feet, examined by R. W. Hayman : see Hayman & Hill, 1971 : 36, 37) ; Angola (Monard, 1935 : 52 ; Hill & Carter, 1941 : 52, 177 ; Hayman, 1963 : 104) ; Zambia (Wroughton, 1907 : 4 ; Lancaster, 1953 : 18, as *Scotoecus woodi*, identified as *Nycticeius hirundo hindei* (= *Scotoecus hindei hindei*) by Ansell, 1960 : 23, Appendix A, p. 110, Appendix B, p. 117 ; Ansell, 1967 : 21, as *S. hirundo hindei* (= *S. hindei hindei*). Hollister (1918 : 94) recorded *albigula* from Kiriba, Uganda, but Kock (1969 : 192)

considers this to represent *S. hirundo hindei* (= *S. hindei hindei*) and notes that Kiriba is in the southern Sudan, 10 miles south of Gondokoro.

REMARKS. The dimensions of B.M. 7.1.11.6 from Petauke, Zambia (Wroughton 1907 : 4), are similar to those of *S. h. albigula*, and this specimen has the generally heavier canines and more massive cheekteeth associated with this form, to which it is referred. Specimens in the Kaffrarian Museum (K.M. 1982, 1983) reported as *Scotoecus woodi* from the Fort Jameson District by Lancaster (1953 : 18) are identified as *S. hirundo hindei* (= *S. hindei hindei*) by Ansell (see above). These may in fact also be referable to *albigula*, and provisionally are listed as such here, as is a specimen reported from Mfuwe Camp, Zambia by Ansell, 1967 : 21 as *S. hirundo hindei* (= *S. hindei hindei*) but which is larger than this subspecies.

It is possible that further specimens may show *albigula* to be specifically distinct. It occurs as far north in Kenya as Mount Elgon and the Cherangani Hills, while *S. h hindei* has been obtained from more southerly localities in Katanga, Zaire and in Tanzania. However, in Kenya *albigula* has been reported only from high elevations, *S. h. hindei* only from lower altitudes, and direct sympatry has yet to be shown to occur.

Scotoecus hindei falabae Thomas, 1915

Scotoecus falabae Thomas, 1915 : 447. Kabwir, northern Nigeria, 2500 feet.

DIAGNOSIS. Similar in most respects to *S. h. hindei* but slightly smaller and dorsally a little paler.

MEASUREMENTS. Length of forearm (8) 32·0–35·2 ; greatest length of skull (7) 13·8–14·4 ; condylobasal length (6) 13·2–13·5 ; condylocanine length (6) 13·5–13·7 ; width of rostrum (7) 6·5–7·0 ; width across anteorbital foramina (7) 5·0–5·3 ; least interorbital width (7) 4·3–4·6 ; zygomatic width — ; width of braincase (6) 7·3–7·9 ; mastoid width (6) 8·4–9·0 ; c^1–c^1 (7) 4·7–5·0 ; m^3–m^3 (7) 6·6–6·9 ; c–m^3 (8) 5·2–5·5 ; length of complete mandible (5) 9·8–10·0 ; c–m_3 (7) 5·6–5·8.

LITERATURE. Rosevear, 1965 : 300 (further description, as a species), 305, fig. 80b (tragus).

DISTRIBUTION. NIGERIA (Kabwir ; Yaba ; Jos, specimens in British Museum (Natural History)) ; CAMEROON (Yagoua ; Mokolo (Mayo Louti), specimens obtained by F. de Vree and W. Verheyen).

REMARKS. Specimens from the northern Cameroon are very similar in size to *S. h. falabae* from Nigeria but on the whole have slightly more massive canines and, to a lesser extent, more massive cheekteeth. In this respect they approach *S. h. hindei*.

There is apparently no sexual dimorphism in size either in *S. hirundo* or in *S. hindei* : however, female specimens in both have slightly smaller, more slender canines than do male examples. The canines of specimens attributed to *S. hirundo* are generally less massive than are those of specimens referred to *S. hindei*, but in the case of *S. hirundo* and *S. hindei falabae* the canines of males of *hirundo* are almost exactly similar in size to those of females of *falabae*.

The only localities at which specimens attributed to *S. hirundo* have been found so far to occur sympatrically with others referred to *S. hindei* are Yagoua, northern Cameroon (*Scotoecus* having been hitherto unreported from the Cameroon), and Didessa River, Wollega Province, Ethiopia, with near sympatry at other Ethiopian localities and in Uganda. From Yagoua, F. de Vree and W. Verheyen obtained four examples of *Scotoecus*, two males and two females. The two male specimens are quite clearly referable to *S. hindei falabae* with which they are in close agreement. The two female specimens have considerably shorter skulls and agree closely with females of *S. hirundo*. F. de Vree and W. Verheyen also obtained a male and female from Mokolo (Mayo Louti) but these are of similar size, agreeing in this respect with *falabae* to which they are referred. The females from Yagoua are smaller than the female of *falabae* from Mokolo and consequently are referred to *S. hirundo*. Measurements of these specimens, and of others from Ethiopia and Uganda, appear in Table 1.

TABLE

Measurements (in millimetres) of specimens from areas o

Registration No.	Sex	Length of forearm	Greatest length of skull	Condylo-basal length	Condylo-canine length	Rostral width	Width across anteorbital foramina	Least interorbit width
S. hirundo								
B.M. 72.4421	♀	31·7	12·6	12·4	12·3	6·1	4·6	4·2
B.M. 70.2267	♂	32·0	—	—	—	6·3	4·9	4·4
B.M. 70.2269	♂	31·1	13·1	12·7	12·6	6·5	5·2	4·2
B.M. 70.2263	♀♀	29·7	12·8	12·1	12·1	6·1	4·7	4·2
70 2266								
B.M. 70.2268		−31·7	−13·4	−12·5	−12·5	−6·4	−5·0	−4·5
B.M. 70.2270		(6)	(5)	(5)	(5)	(6)	(6)	(6)
B.M. 72.4420*	♀	31·8	—	12·4	12·4	6·0	4·6	4·2
B.M. 74.4	♂	32·0	—	12·7	12·8	6·5	5·2	4·5
B.M. 74.1	♀	32·5	13·4	12·9	13·0	6·4	5·0	4·7
B.M. 74.2	♀	30·4						
B.M. 74.3	♀	30·8	13·2	12·5	12·6	6·2	4·6	4·4
B.M. 74.5*	♀	30·1						
1.430	♀	31·5	13·2	12·4	12·5	6·2	4·9	4·3
1.431	♀	32·8	13·5	12·7	12·9	6·0	4·8	4·3
S. hindei hindei								
B.M. 72.4423	♂	34·1	14·2	13·6	13·6	7·1	5·4	4·8
B.M. 70.2262	♂	37·2	14·8	14·2	14·2	6·7	5·3	4·6
B.M. 72.4422	♂	33·4	—	13·6	13·5	—	—	4·6
B.M. 63.1151	♂	—	14·4	13·9	13·8	6·6	5·3	4·6
B.M. 65.3435	♂	32·7	14·2	13·7	13·9	6·7	5·3	4·7
S. hindei falabae								
1.415	♂	32·9	13·8	13·4	13·5	6·5	5·0	4·4
1.429	♂	32·6	13·9	13·3	13·5	6·8	5·2	4·3
1.667	♂	32·0	14·0	13·2	13·5	7·0	5·2	4·5
1.682	♀	33·5	13·9	13·2	13·6	6·5	5·1	4·4

* Young adult

ACKNOWLEDGEMENTS

My thanks are due to Dr M. J. Largen of the Haile Selassie I University, Addis Ababa, Ethiopia, whose specimens, donated to the British Museum (Natural History), first suggested this study. Dr F. de Vree of the Laboratorium voor Algemene Dierkunde, Rijksuniversitair Centrum, Antwerp, Belgium, has generously allowed me to make use of his important specimens (collected with Dr W. Verheyen) from the northern Cameroon, and, furthermore, has been especially helpful in providing measurements and data from specimens in other European collections, drawn from his own records. I am indebted also to Dr V. Aellen of the Muséum d'Histoire Naturelle, Geneva, Switzerland, who has given permission for the publication of data taken from specimens in the collections in his care, and to Mr J. F. Kingdon, whose specimens from Uganda proved invaluable to the course of the work.

mpatry or near sympatry between *S. hirundo* and *S. hindei*

gomatic width	Width of braincase	Mastoid width	c^1–c^1	m^3–m^3	c–m^3	Length of complete mandible	c–m_3	Location
—	7·1	8·2	4·3	6·0	4·7	—	4·9	Didessa, Ethiopia
—	7·5	—	4·7	6·6	4·9	—	5·3	Gambela, Ethiopia
—	7·2	8·3	4·8	6·6	5·0	9·4	5·3	Gambela, Ethiopia
	7·3	8·2	4·6	6·3	4·7	8·9	4·9	
—	−7·5	−8·3	−4·7	−6·5	−4·8	−9·9	−5·2	Gambela, Ethiopia
	(4)	(5)	(6)	(6)	(6)	(6)	(6)	
—	7·0	7·7	4·3	5·9	4·7	9·1	5·1	Gambela, Ethiopia
—	7·5	—	4·8	6·3	5·1	9·9	5·5	Budongo, Uganda
—	7·6	—	4·7	6·6	5·1	9·6	5·3	Budongo, Uganda
								Budongo, Uganda
—	7·1	8·3	4·6	6·3	4·8	9·4	5·1	Budongo, Uganda
								Budongo, Uganda
—	7·3	8·3	4·5	6·6	4·9	9·0	5·2	Yagoua, Cameroon
—	7·3	8·2	4·5	6·7	5·0	9·6	5·4	Yagoua, Cameroon
—	7·5	8·9	5·1	6·9	5·3	10·0	5·6	Didessa, Ethiopia
—	7·8	9·4	5·2	7·0	5·7	10·6	6·1	Bulcha, Ethiopia
—	7·9	8·8	—	—	5·4	—	5·8	Bulcha, Ethiopia
—	7·3	8·8	5·3	6·9	5·3	10·3	5·7	West Madi, Uganda
—	8·0	9·2	5·2	6·5	5·4	10·6	5·8	Nabumali, Uganda
—	7·5	8·4	4·8	6·7	5·5	10·0	5·8	Yagoua, Cameroon
10·1	7·3	8·6	5·0	6·9	5·3	10·0	5·8	Yagoua, Cameroon
—	7·4	8·6	4·9	6·7	5·2	9·8	5·6	Mokolo (Mayo Louti), Cameroon
10·0	7·4	8·9	4·7	6·8	5·3	10·0	5·7	Mokolo (Mayo Louti), Cameroon

SUMMARY

The vespertilionid genus *Scotoecus* is reviewed in detail, and is considered to include four species, one, *pallidus*, from India, having been referred at one time to *Scoteinus* and more recently to *Nycticeius*. The three remaining, *albofuscus*, *hirundo* and *hindei* are African : evidence is brought forward to support the view that *hirundo* and *hindei* are specifically distinct, not conspecific as thought by the majority of modern authors. Both are reported for the first time from the Cameroon and from Ethiopia.

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